



YOSEMITE NATIONAL PARK

Parkwide Invasive Plant Management Plan and Environmental Assessment





WHAT ARE INVASIVE PLANTS?

- **Not native to ecosystem** (alien, exotic)
- **Impact economy and / or environment**
- **Not all non-natives are invasive**





ENVIRONMENTAL IMPACTS

- Crowd out native plants & animals
- Cause species extinctions
- Change fire frequency & intensity
- Hybridize with native species
- Increase erosion





INVASIVE PLANTS IN YOSEMITE

- 150 non-native species in park
 - 25-30 considered invasive
- Primarily in lower elevations
- Developed and disturbed areas
 - El Portal
 - Wawona
 - Foresta
 - Yosemite Valley
 - Hetch Hetchy





YELLOW STAR-THISTLE

- 15 million acres in California
- 20,000+ acres each year





HIMALAYAN BLACKBERRY

- Invades meadows and creeks
- Dense, spiny brambles





SPOTTED KNAPWEED

- Millions of acres in Montana, Idaho and Washington
- Log cabin kit in Foresta





ONGOING EFFORTS: YOSEMITE

- Reduction of yellow star-thistle and other invasive populations
 - volunteers and work crews
 - community involvement
- Early detection along road corridors
- Heavy equipment inspections



MANAGEMENT PLAN / EA

Components:

- Early detection and prevention
- Prioritization of efforts
- Determine appropriate techniques
- Education & collaboration
- Monitoring & research



EARLY DETECTION & CONTROL

- **Low impact & cost effective**
 - maintain ecosystems – not restoration
- **Target high priority areas**
 - roads
 - construction zones
 - developed areas
- **Heavy equipment inspections**



PRIORITIZATION

Establish Criteria

- Species threat
- Location in park
- Feasibility of control



CONTROL TECHNIQUES

Some examples are:

- Mechanical Removal
- Fire
- Chemical
- Biological Control



CONTROL: MECHANICAL

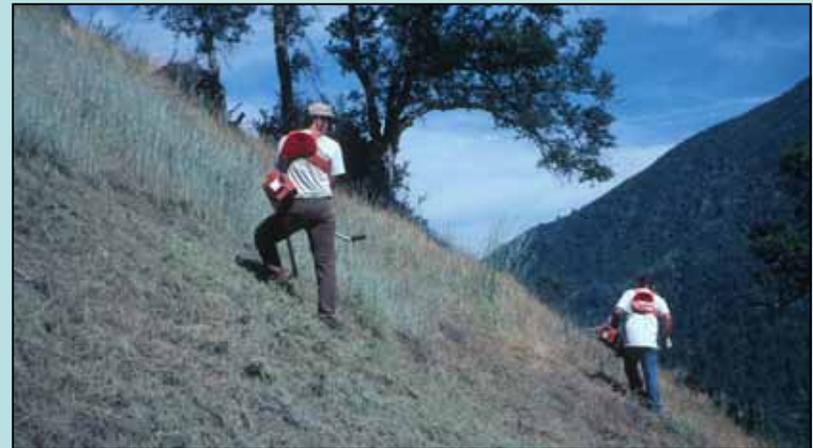
Hand pulling, tilling, mowing

- Benefits

- selective

- Disadvantages

- labor intensive
- disturbs ground





CONTROL: FIRE

Prescribed burning & flaming

- Benefits

- cover larger areas
- reduce biomass

- Disadvantages

- stimulate resprouting & germination
- air quality
- risk of spread



CONTROL: CHEMICAL

Herbicide Use

- Benefits

- can be effective initial treatment
- effective against trees and shrubs

- Disadvantages

- can affect non-target species
- cost (training, equipment, herbicide)
- potential toxicity

CONTROL: BIOLOGICAL



Introduce an herbivore or pathogen

- Benefits

- continue to work for many years
- proven effective at treating large infestations

- Disadvantages

- potential threat to non-target plants
- introduces another exotic species



MANAGEMENT PLAN / EA

- ✓ Early detection and prevention
- ✓ Prioritization of control efforts
- ✓ Determine appropriate techniques
 - Education & collaboration
 - Monitoring & research



EDUCATION & COLLABORATION

- **Educate and inform visitors and public**
 - wildflower & weed walks
 - notification of proposed actions
- **Collaborate with nearby land agencies & land managers**
 - weed management areas
 - Sierra San Joaquin Noxious Weed Alliance



MONITORING & RESEARCH

- **Effectiveness of control techniques**
 - conduct experiments
 - adaptive management
- **Promote partnerships with research institutions**
 - invasive species and ecosystem function
 - biodiversity and invasion
 - invasion at high elevations



CONCLUSION

- **With your help in this plan, the National Park Service can make informed and effective decisions about how to deal with invasive species in Yosemite National Park**



HOW DID THEY GET HERE?

- **Intentional introduction**
 - ornamentals
 - agriculture
 - forage for domesticated animals
 - erosion control/revegetation
- **Accidental introduction**
 - contaminated seed mixtures
 - transported soil (cars, construction equipment, boots)